

## UNIFORMITARIANISM, PROBABILITY AND EVOLUTION

A. J. ("MONTY") WHITE\*

*The author has endeavored to show that Lyell's Uniformitarianism Hypothesis is not only the philosophy governing the study of Geology, but also that which governs Cosmology and Chemical Evolution. He then considers the formation by chance of a small protein 100 amino acids long, containing 20 different amino acids in a definite sequence from a "primeval soup" where all the Earth's hydrospheric water molecules have been replaced by these 20 different amino acids. The author uses the laws of probability to show that the odds of forming such a small protein by chance in the last  $10^{10}$  years are  $10^{67}$  to 1 against. In light of this conclusion, the complex nature of DNA is then briefly discussed with reference to the genetic code. Finally the author concludes that in order to avoid confusion, science must only be studied in the light of God's revelation to man.*

Research students are awarded a Doctor of Philosophy (Ph.D.) degree for writing a thesis on an original piece of research work in a particular academic discipline. Often the thesis produced contains no philosophical discourses, but is a mere record of the student's research program with an attempt to show how the findings of that piece of research fit into the overall picture of the student's particular academic subject.

Indeed, I found that as an undergraduate student in chemistry, philosophical discourses were discouraged and often banned in lectures and seminars. To illustrate this point, I remember a lecturer of thermodynamics being asked by a student how he and the other students would answer the question, "Is not the Evolutionary Theory a contradiction of the Second Law of Thermodynamics?" The lecturer refused to answer the question and would not allow anyone else to discuss this vital question.

Furthermore, it has been my experience both as a post-graduate research student and a post-doctoral research fellow in the field of Physical Chemistry, that philosophical discussions in lectures, seminars and research colloquia have not been encouraged, and the philosophy of science and scientific method are totally neglected in most scientific teaching. The result of teaching Chemistry in this way, i.e. as a strict discipline, is a plethora of Chemistry Ph.D. degree holders, who are often incapable of philosophical thought, and who do not give any consideration to the implications of the various hypotheses and theories with which they have been indoctrinated.

### Uniformitarianism

The physical laws of nature, such as the laws of gravity, motion and thermodynamics are taught with the inference that they have always been and always will be in operation. Similarly with physical quantities (such as the velocity of light, the strength of chemical bonds, the physical and

chemical properties of chemical compounds), there is again this inference that the values and properties, determined today, are the same as those which would have been determined at any time during the past or which would be determined at any time in the future.

This inference is, however, only true for the period of time from the time of the creation by Almighty God until the day "in the which the heavens shall pass away with a great noise, and the elements shall melt with fervent heat, the earth also and the works that are therein shall be burned up."<sup>1</sup> Furthermore, the word of God records<sup>2</sup> that God "Himself existed before all things and in Him all things consist—cohere, are held together."

Now because God is unchanging<sup>3</sup>, it is not unreasonable to deduce that the majority of the laws governing science, and the physical and chemical properties of matter have not changed since the creation, and will not change until the "destruction." It must, however, be noted that certain measured properties are not constant and their values vary from year to year, e.g. the position in the sky to which the north pole points<sup>4</sup> and the value of the earth's magnetic moment.<sup>5</sup>

Very little thought is given by science students to the truth and/or the implications of the above inference because, generally speaking, the Uniformitarian Hypothesis is integrated into the whole of science, and is accepted consciously or unconsciously without question as being true. This hypothesis, which was propogated by Charles Lyell (1797-1875) in his famous text book, *Principles of Geology*, may be expressed briefly as "the present is the key to the past."

This hypothesis is usually thought of applying only to the field of Geology, where it is taught that all the geological processes now operating on the earth have been acting in the same way in the past over extremely long periods of time, and that such gradual processes account for the world as we see it today, with its continents of mountains, valleys and fossiliferous strata. We can see, however, that Lyell's hypothesis of Uni-

\*A. J. ("Monty") White is a Ph.D. graduate in chemistry of the University of Wales. He is at present a post-doctoral research fellow at the Edward Davies Chemical Laboratories, Aberystwyth, United Kingdom.

formitarianism is not only in operation in the Geological field but also in *all* areas of science.

### Cosmology

In the field of Cosmology, this type of reasoning has led to two different evolutionary hypotheses dealing with the nature of the universe—Hoyle's "Steady State" hypothesis (also called the "continuous Creation" hypothesis, although it involves a continuous *evolution* [not creation] of matter out of nothing), and Gamow's "Eternal Oscillation" hypothesis (also called the "Big Bang" hypothesis).

Hoyle's hypothesis can be expressed in one of his own sentences: "This idea requires atoms to appear in the Universe continually instead of being created explosively at some definite time in the past."<sup>6</sup> Gamow's theory, on the other hand, is expressed in the conclusion,

that our universe has existed for an eternity of time, that until about five billion years ago it was collapsing uniformly from a state of infinite rarefaction; that five billion years ago it arrived at a state of maximum compression in which the density of all its matter may have been as great as that of the particles packed in the nucleus of an atom (i.e., 100 million million times the density of water), and that the universe is now on the rebound, dispersing irreversibly toward a state of infinite rarefaction.<sup>7</sup>

Both these theories are evolutionary and uniformitarian in thought, and both involve the assumption that the universe did not have a beginning, and will not have an end. The difference between these two theories has been summed up in the following manner:

The steady state theory suggests that the universe looks more or less the same, from any position and at any time in the past, present or future, whereas according to the big bang cosmology the universe (that we see today) started in a highly compressed state as a "primeval atom," which exploded and developed into the system of galaxies observed today.<sup>8</sup>

As proponents of both of these theories assume that the laws governing science and the physical and chemical properties of matter remain the same throughout time, it is concluded that studying the processes occurring in the universe today, and making observations of remote stars and galaxies is the key to understanding how the universe evolved, i.e. *the present is the key to the past*. This is the definition of the Uniformitarianism Hypothesis!

### Chemical Evolution

This hypothesis, naturally enough, is the philosophy governing the study of Chemical Evolu-

tion—a term which "has come to mean the chemical events that took place on the primitive, prebiotic Earth (about 4.5-3.5 billion years ago), leading to the appearance of the 1st living cell."<sup>9</sup>

Again using as their tenet of faith "the present is the key to the past," scientists have (i) reconstructed in their laboratories similar atmospheric conditions which they *think* existed on the primitive, prebiotic Earth, and (ii) passed electrical discharges and electro-magnetic radiation through this inorganic atmosphere to try to produce organic compounds.

For example, in 1953, Miller<sup>10</sup> produced glycine, *a* — and *b* — alanine, aspartic acid and (*a* — amino butyric acid from a mixture of methane, ammonia, water vapor and hydrogen using high energy radiation. (Figure 1). Lemmon summarizes the results of all the chemical evolution experiments that had been done up to March 1969 in the following manner:

The most important organic molecules (biomonomers) in living systems have been enumerated as the 20 amino acids of the natural proteins, the 5 nucleic acid bases, glucose, ribose, and deoxyribose. Of these, laboratory experiments under conditions clearly relevant to probable conditions on the primitive Earth have resulted in the appearance of at least 15 of the 20 amino acids, 4 of the 5 nucleic acid bases, and 2 of the 3 sugars. In addition, representatives of the biologically important nucleosides, nucleotides, fatty acids, and porphyrins have been observed. This research has made it clear that these compounds would have accumulated on the primitive (prebiotic) Earth—that their formation is the inevitable result of the action of available high energies on the Earth's early atmosphere. (Reference 9).

With the results of such experiments in mind, scientists demand that in the course of time such lifeless organic molecules became assembled *by chance* into a living organism.<sup>11</sup>

### Probability

Let us examine this hypothesis of life originating *by chance* from lifeless organic molecules. Let us suppose that we have 20 amino acids, and that we wish to construct *by chance* a small protein 100 amino acids long in a particular sequence. There are in all  $20^{100}$  or  $10^{136}$  possible configurations of this protein. The earth's hydrosphere is  $1.37 \times 10^9$  cubic kilometres in size<sup>12</sup> containing about  $10^{47}$  molecules.<sup>13</sup>

Now we will assume that the primitive, prebiotic earth's ocean was the same size as the present hydrosphere, but instead of being composed of  $10^{47}$  water molecules, we will put  $10^{47}$  of our amino acids instead—a very concentrated primeval broth considering that, according to

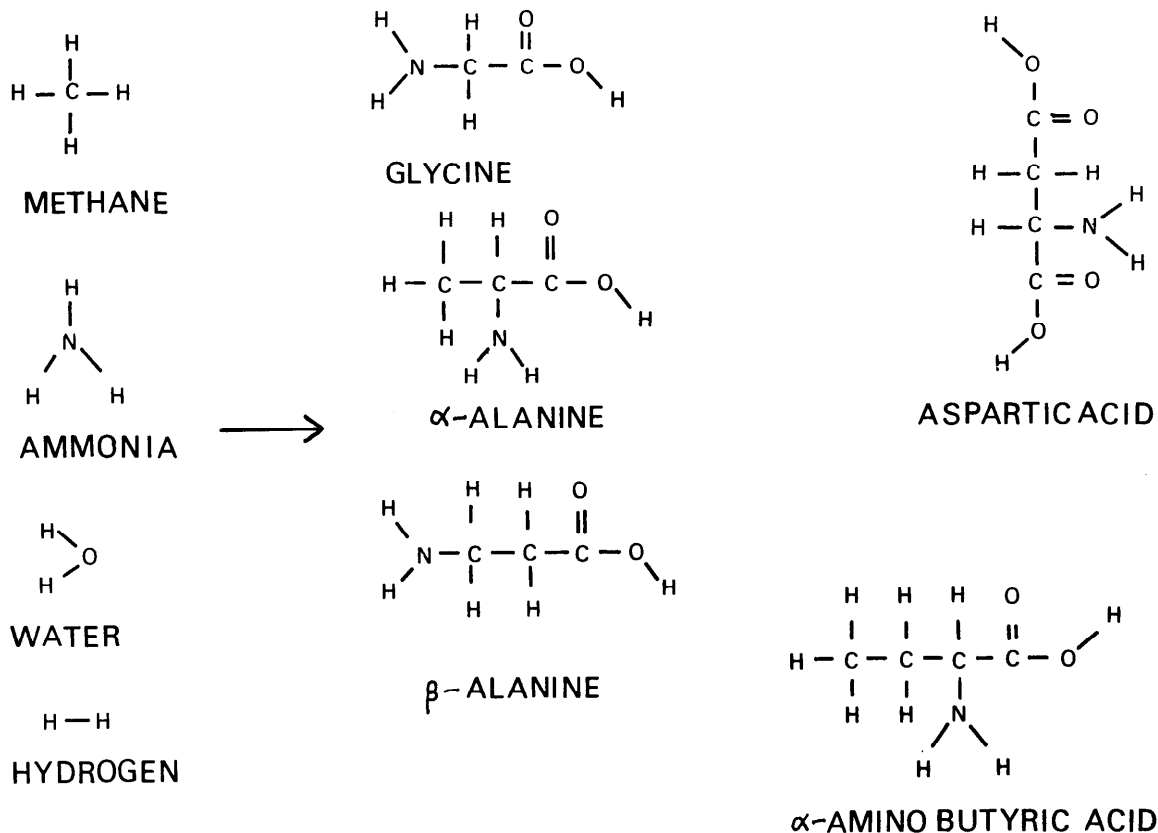


FIGURE 1

chemical evolutionists, it would have taken  $3 \times 10^8$  years for the abiogenic earth's oceans to have developed a 1% solution of organic matter.<sup>14</sup>

Now suppose that all of these amino acids linked up to form protein molecules 100 amino acids long, every second. This would produce  $10^{45}$  proteins per second. Now a year is about  $3 \times 10^7$  seconds long—say  $10^8$  seconds to “round it off.” Hence every year,  $10^{53}$  proteins—each 100 amino acids long—would form.

Although cosmologies vary, many evolutionists hold that the earth condensed from a dust cloud 4.5-4.8  $\times 10^9$  years ago.<sup>15</sup> Even if we assume it was  $10^{10}$  years ago, this would mean that, during this whole period of time,  $10^{63}$  proteins—each 100 amino acids long—would be formed.

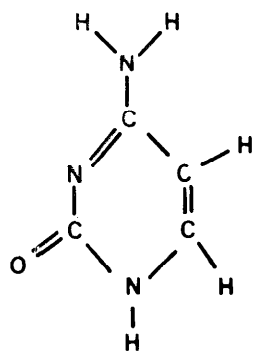
This, however, is still  $10^{67}$  short of the  $10^{130}$  possible configurations. This means that the chances of a simple protein containing 20 different amino acids and 100 amino acids long being formed by chance from the earth's oceans containing nothing else but these 20 different amino acids during  $10^{10}$  years is 1 to  $10^{67}$  against!

Chemical evolutionists, such as Lemmon mentioned already, however, insist that lifeless organic molecules assembled by chance to form living organisms in about  $10^9$  years. Now in order for the 100 amino acid long protein in the above example to be produced in  $10^9$  years, the amino acids would have had to link up  $10^{68}$  times every second!

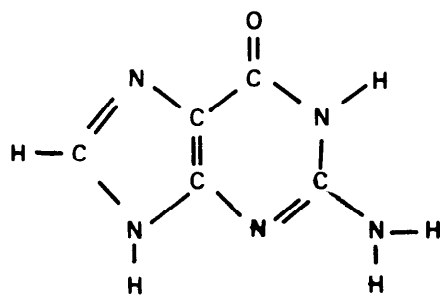
#### DNA Considered

How long would it therefore require to form by chance, in the above examples, one molecule of DNA? These initials stand for deoxyribonucleic acid. This is composed of the four bases: Adenine, Cytosine, Guanine and Thymine (often abbreviated by A, C, G and T, respectively), which are linked together like a spiral staircase by sugar and phosphate bonds to make a chain. (Figures 2 and 3).

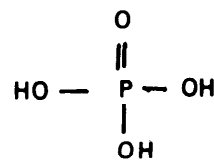
Now it is the structure of this long thread-like molecule which determines that mice beget only mice, dandelions only dandelions and man only man. The DNA in  $\phi$ X 174, a small virus that infects the colon bacillus *Escherichia coli*, is a



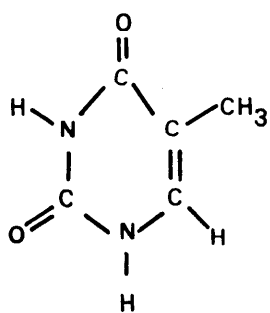
CYTOSINE



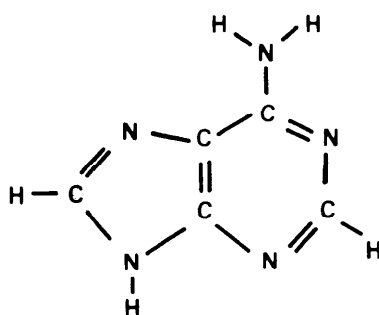
GUANINE



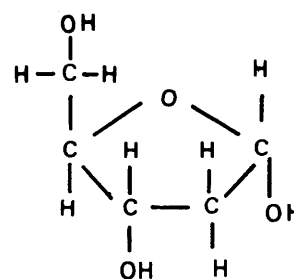
PHOSPHATE



THYMINE



ADENINE



SUGAR

FIGURE 2

BUILDING BLOCKS OF DNA

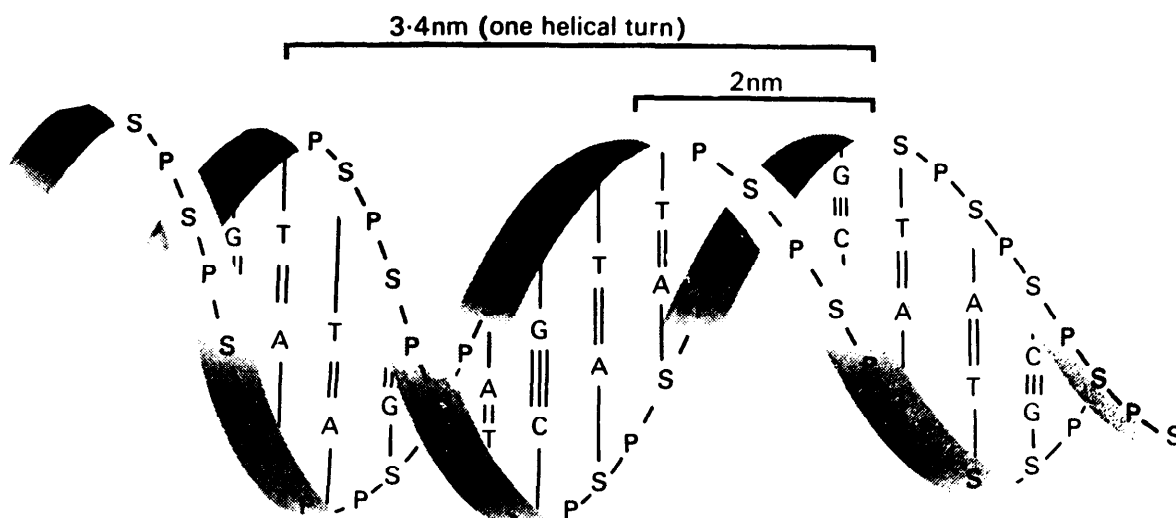


FIGURE 3 STRUCTURE OF DNA

S = sugar      T = thymine      G = guanine      P = phosphate      A = adenine      C = cytosine

single-stranded circular molecule composed of, not 100 amino acids as in the above simple hypothetical protein, but 5500 deoxy-nucleotides,<sup>16</sup> and the amount of DNA in bacteria is 1000 times as large, and in human cells, 1,000,000 times as large as this.

DNA is a most complex molecule and is really a genetic code, similar to a master computer or file. Its genetic recipe is so complex that F. H. C. Crick, a Nobel Prizewinner, says that if this language of life were translated into English, it would occupy 1,000 books of 500 pages each. There is, however, no known single writing of man as long as this. The code is about 300 times as long as the *Works of William Shakespeare* and nearly 20 times as long as *Encyclopaedia Britannica*. Even in the face of all this complexity, evolutionists want us to believe that the genetic code arose by chance.

### Illogical Approach

In order to show the thinking and philosophy behind Chemical evolutionists, Victor Pearce<sup>17</sup> uses the following amusing illustration:

A native stands before the airliner—a native who has only recently been introduced to metals and smelting. The white man, impatient at the native's refusal to believe in the white man's aeroplane factories, ironically dismisses the native's curiosity by saying This is how the airliner originated. One day there was a terrific thunderstorm. Lightning played upon ore-bearing rocks, and fused the various ores into lumps of molten iron, copper and bauxite. Again the lightning struck before the metals had cooled, so that the metals formed themselves into patterns inherent in their atomic particles. This resulted in simple components being formed—nuts, bolts, aluminum plates, etc. Again the lightning struck and formed more complex components—cylinder heads, pistons, rings, wires (ready insulated), turbines, blades, propeller parts, wheels, and melted some rubber trees into tyres and left all these in a heap.

Again the lightning struck and flung the heap high into the air. Some of the nuts were near enough to the bolts to respond to an inherent attraction and screw themselves together capturing another component in the process and so were selected for the developing plane. Other pieces fell uselessly as unwanted debris and so were not selected. After repeated lightning the major units were formed: engines, panel instruments, struts, fuselage, tanks, seats and lavatory pans.

Coincidentally an earthquake ruptured the strata and released oil from an anticline. The oil spouted and poured itself into the tanks,

refining and separating into grades on the way.

A final burst of lightning flung everything up into the air. There were far more parts than those required by any one aeroplane, but those which were lucky enough to fall into a viable position made up a complete airliner which throbbed into life and made a safe landing.

Isn't this just the type of fable that the evolutionists would have us believe?

### Concerning Confusion

Finally, to go back to the initial question which was asked the Thermodynamics lecturer: "Is not the Evolutionary Theory a contradiction of the Second Law of Thermodynamics?" the answer is "Yes!"

According to Evolutionary Theory, in time chaos and confusion will go to order; whereas, according to the Second Law of Thermodynamics, in time order will give rise to chaos and confusion. It appears that the Second Law of Thermodynamics seems to apply to Evolutionists, for in time as they have disregarded the ordered thinking that the Bible teaches, and their thinking has become chaotic and confused.

The Bible tells us that "God is not the author of confusion,"<sup>18</sup> and that He made plants and animals, with their own particular DNA, such that they would reproduce only "after their kind."<sup>19</sup>

### References

- <sup>1</sup>II Peter 3:10 (Authorized Version).
- <sup>2</sup>Colossians 1:17 (The Amplified Bible).
- <sup>3</sup>Malachi 3:6.
- <sup>4</sup>Moore, Patrick. 1961. *Astronomy*. Oldbourne, London, p. 22.
- <sup>5</sup>Barnes, Thomas G. 1971. Decay of the earth's magnetic moment and the geochronological implications, *Creation Research Society Quarterly*, 8(1):24-29. June.
- <sup>6</sup>Hoyle, Fred. 1955. *Frontiers of astronomy*. Harper's, New York, p. 317.
- <sup>7</sup>Gamow, George. 1955. *Modern cosmology*. (in) *The new astronomy*. Editors of *The Scientific American*. Simon and Schuster, New York, p. 23.
- <sup>8</sup>Nature Science Report on 1968. Macmillan, London, p. 2.
- <sup>9</sup>Lemmon, Richard M. 1970. Chemical evolution, *Chemical Reviews*, 70:95-109.
- <sup>10</sup>Miller, S. L. 1953. A production of amino acids under possible primitive earth conditions. *Science*, 117:528-529.
- <sup>11</sup>Barghoorn, Elso S. 1971. The oldest fossils, *Scientific American*, 224 (5):30-42.
- <sup>12</sup>Water (in) *Van Nostrand's Scientific Encyclopedia*. 1947. D. Van Nostrand Company, Inc. New York.
- <sup>13</sup>On the assumption that the density of water is 1 gm per c.c. and that 1 molecule of water weight  $3 \times 10^{23}$  gms.
- <sup>14</sup>Shklovskii, I. S. and C. Sagan. 1966. *Intelligent life in the universe*. Holden-Day, Inc., San Francisco, Calif., p. 233.

<sup>15</sup>Tilton, G. R. and R. H. Steiger. 1965. Lead isotopes and the age of the earth, *Science*, 150:1805-1808.

<sup>16</sup>Goulian, M. 1969. Synthesis of viral DNA, *Science Journal*, 5(3):35-42.

<sup>17</sup>Pearce, E. K. V. 1969. Who was Adam? The Patter-noster Press, Exeter, Devon, United Kingdom, p. 104.

<sup>18</sup>1 Corinthians 14:33 (Authorized Version).

<sup>19</sup>Genesis 1:11-12, 20-21, and 24-25.

## THE TWIG GIRDLER'S INSTINCTIVE BEHAVIOR

WILLARD L. HENNING\*

Among the insects that work hard to make special provision for food in a favorable state for their developing young, the twig girdler beetles should be rated highly.<sup>1</sup> Most remarkable is the habit of this type of long-horned beetle which simply girdles a twig instead of gathering food, storing it in a safe place and depositing an egg on it as many insects do.

The jaws or "mandibles" of both the larvae (round-headed borers) and adult long-horned beetles are among the most powerful of any insect, since the larvae feed on the hardest wood. However the adult female long-horned beetle (*Oncideres cingulata* Say)<sup>2</sup> of the twig girdler habit gnaws the bark and outer wood of certain hardwood twigs or branches (about one-half inch in diameter) for forty or fifty hours<sup>3</sup> so as to encircle the twig (one-eighth inch deep) and cut off the passage of sap and nutrients to and from the outer branchlets. She then lays about twelve to twenty eggs on the smaller branchlets. She repeats this on several other twigs.

Why is the girdling process essential? Really for two reasons. The larval wood borers must have the wood both dead and moistened to feed upon. In the autumn after the twigs are girdled, they easily break off in a stiff breeze or wind. Once they fall to the ground the entire branch absorbs at least some soil moisture, and partial

decay may result. The larvae feed on the wood during the following spring and summer and become pupae and adults by September or October. After mating the females repeat their labori-ous process of twig girdling.

Those who believe in evolution might account for such an instinctive habit by claiming such an act of behavior developed by some supposed evolution during the past several millenia. Yet the development of entirely new and complex patterns of instinctive behavior on the part of insects, under natural conditions, has not been demonstrated.

We know from God's Word that "without Him was not anything made that was made" (John 1:3b). This includes not only the living creatures, but their instinctive behavior patterns and acts necessary for their own survival and for their offspring. Instinctive behavior for survival is referred to by ants in Proverbs 30:25 and by migratory birds in Jeremiah 8:7. No doubt the habit of killing the outer twigs of trees came about after man first sinned and the curse fell on the entire creation (Genesis 3: 17-19, Romans 8:22).

### References

<sup>1</sup>Metcalf, C. L., and W. P. Flint. 1928. Destructive and useful insects, their habits and control. Fourth edition. McGraw-Hill Book Co., Inc., N. Y., pp. 11-12.

<sup>2</sup>*Ibid.*, p. 664.

<sup>3</sup>Metcalf, C. L., and W. P. Flint. 1962. Destructive and useful insects, their habits and control. First edition. McGraw-Hill Book Co., Inc., N. Y., p. 159.

\*Willard L. Henning, Ph.D., is professor of biology and chairman of the natural science division at Bryan College, Dayton, Tennessee.